NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

CONSERVATION CROP ROTATION
(Acre)
CODE 328

DEFINITION

Growing crops in a recurring sequence on the same field.

PURPOSE

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce sheet and rill erosion
- Maintain or improve soil organic matter content.
- Manage deficient or excess plant nutrients.
- Manage plant pests (weeds, insects, diseases).
- Provide food for domestic livestock.
- Provide food and cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown. This standard does not apply to pastureland, hayland, or other land uses where annual row or close growing crops are grown occasionally only to facilitate renovation or reestablishment of perennial vegetation.

CRITERIA

General Criteria Applicable to all Purposes Named Above

Crops shall be grown in a planned, recurring sequence except as outlined in Operation and Maintenance.

Crops shall be adapted to the climatic region and the soil resource and the goals of the producer. Select crops and varieties recommended by the LSU Agricultural Center.

A conservation crop rotation may include crops planted for cover or nutrient enhancement.

Crops shall be selected that produce enough above and below ground plant biomass to control erosion within the soil loss tolerance (T) or any other planned soil loss objective. In those instances where selected crops fail to produce sufficient biomass to meet this criteria, a cover crop (see Cover Crop, 340) or other appropriate practices shall be used.

The amount of biomass needed shall be determined using current approved erosion prediction technology. Calculations shall account for the effects of other practices in the conservation management system.

Additional Criteria to Maintain Or Improve Soil Organic Matter Content

Crops shall be selected that produce the amount of plant biomass needed to maintain soil organic matter content as determined using the current approved Soil Conditioning Index Procedure. The current approved procedure for Louisiana is a computerized worksheet, which operates in Microsoft

Excel 5.0 or higher . The index value is computed using climate, organic material, field operations, and erosion data. A positive index value predicts improving soil condition. A negative index value predicts declining soil condition.

If partial removal of residue by means such as baling or grazing occurs, enough residue shall be maintained to achieve the desired soil organic matter content goal.

Cover and green manure crops planted specifically for soil improvement may be grazed as long as grazing is managed to retain adequate biomass.

Residue shall not be burned, except in sugarcane rotations (as specified by the Louisiana Department of Agriculture and Forestry).

Additional Criteria to Manage Deficient or Excess Plant Nutrients

Crop selection and sequence shall be determined using an approved nutrient balance procedure. (See Nutrient Management, 590).

When crop rotations are designed to add nitrogen to the system, nitrogen-fixing crops shall be grown immediately prior to, or interplanted with nitrogen-depleting crops.

To reduce excess nutrients, crops or cover crops having rooting depths and nutrient requirements that utilize the excess nutrients shall be grown.

Additional Criteria to Manage Plant Pests, Weeds, Insects, Diseases

Crops shall be alternated to break the pest cycle and/or to allow for the use of a variety or other control methods. Affected crops and alternate host crops shall be removed from the rotation for the period of time needed to break the life cycle of the targeted pest.

Resistant varieties recommended by LCES shall be selected where there is a history of a pest problem.

Additional Criteria to Provide Food for Domestic Livestock

Crops shall be selected to balance the feed supply with livestock numbers. The needed amount of selected crops shall be determined using a livestock-forage budget.

Additional Criteria to Provide Food and Cover for Wildlife

Crop selection shall be determined using the Louisiana Wildlife Habitat Evaluation for Resource Management Systems.

CONSIDERATIONS

When used in combination with Residue Management practices selection of high residue producing crops and varieties, use of cover crops, and adjustment of plant population and row spacing can enhance production of the kind, amount, and distribution of residue needed.

Where maintaining or improving soil organic matter content is an objective, the effects of this practice can be enhanced by reducing tillage, utilizing animal wastes, or applying mulches to supplement the biomass produced by crops in the rotation.

Where excess plant nutrients or soil contaminants are a concern, rotating deep rooted crops or cover crops with shallow rooted crops can help recover the nutrient or contaminant from the soil profile.

Where precipitation is limited, seasonal, or erratic, moisture can be conserved for crop use by maintaining crop residues on the soil surface to increase infiltration and to reduce runoff and evaporation.

Where improving water use efficiency on deep soils is a concern, rotating deep rooted crops with shallow rooted crops can help utilize all available water in the soil profile.

Soil compaction can be reduced by this practice when rotations including deep rooted crops (able to extend to and penetrate the compacted soil layers) are used in combination with deep tillage, controlled traffic, or management of grazing animals to prevent or break-up compacted layers.

Where pesticides are used, consider application methods and the crop rotation to avoid negative impacts on the following crop due to residual herbicides in the soil or adverse affects on aquatic wildlife or habitat through runoff.

Leaving several rows unharvested around the edges of the field will provide protection and/or food for overwintering wildlife.

Crop plantings may be developed to benefit particular communities, species or life stages of wildlife. Food plots or crops for wildlife could be provided as part of a habitat restoration project as an initial food and cover source for wildlife until food and cover producing vegetation becomes established.

Crop residues may be a valuable food source for wintering wildlife where winter browse is sparse.

Careful consideration should be given to pesticide use if applied to crops raised for wildlife.
This practice has the potential to have either a positive or negative affect National Register listed or eligible (significant) cultural resources (archeological, historic or traditional cultural properties). Care should be taken, especially during site preparation and maintenance, to avoid adverse effects to these resources. Follow NRCS state policy for considering cultural resources during planning and maintenance.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of the practice shall be prepared for each field or treatment unit according to the criteria, considerations and operation and maintenance described in this standard. Specifications shall be recorded using appropriate worksheets and narrative statements in the conservation plan.

OPERATION AND MAINTENANCE

Rotations shall provide for acceptable substitute crops in case of crop failure or shift in planting intentions for weather related or economics reasons. Acceptable substitutes are crops that meet the criteria for all the resource concerns identified for the field or treatment unit.

In sugarcane producing areas, a summer fallow period is a component of a normal crop rotation. The summer fallow period in the sugarcane rotation shall be used to prepare a seedbed for the next sugarcane rotation and to break weed, insect, and disease cycles.